SECTION 02741 - HOT-MIX ASPHALT PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Hot-mix asphalt paving.

B. Related Sections include the following:

1. Division 2 Section "Earthwork" for aggregate subbase and base courses and for aggregate pavement shoulders.

1.2 DEFINITIONS

A. Hot-Mix Asphalt Paving Terminology: Refer to ASTM D 8 for definitions of terms.

B. DOT: Department of Transportation.

1.3 SYSTEM DESCRIPTION

A. Provide hot-mix asphalt paving according to materials, workmanship, and other applicable requirements of the City of Omaha Standard Specifications for Public Works Construction, 2003 Edition.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.

B. Job-Mix Designs: For each job mix proposed for the Work.

C. Material Test Reports: For each paving material.

D. Provide two (2) copies of City of Omaha Standard Specifications for Public Works Construction, 3rd Edition to be retained by the Government.

1.5 QUALITY CONTROL

A. Manufacturer Qualifications: A qualified manufacturer.

1. Manufacturer shall be a paving-mix manufacturer registered with and approved by authorities having jurisdiction or the DOT of the state in which Project is located.

B. Testing Agency Qualifications: Qualified according to ASTM D 3666 for testing indicated, as documented according to ASTM E 548. CONTRACTOR shall provide all testing by a qualified third party testing firm. Testing firm shall be preapproved by the Government.

C. Asphalt-Paving Publication: Comply with AI MS-22, "Construction of Hot Mix Asphalt Pavements," unless more stringent requirements are indicated.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp or if the following conditions are not met:

1. Prime and Tack Coats: Minimum surface temperature of 60 deg F (15.5 deg C).
2. Asphalt Base Course: Minimum surface temperature of 40 deg F (4 deg C) and rising at time of placement.
3. Asphalt Surface Course: Minimum surface temperature of 60 deg F (15.5 deg C) at time of placement.

PART 2 - PRODUCTS

2.1 AGGREGATES

A. The mineral aggregate shall consist of crushed gravel, crushed stone, sands, gravel, and mineral filler conforming to the requirements specified below. That portion of the materials which retains a No. 4 sieve shall be designated as coarse aggregate; that portion which passes a No. 4 sieve and retains on a No. 200 sieve shall be designated as fine aggregate; and that portion which passes a No. 200 sieve shall be designated as mineral filler.

1. Coarse Aggregate for Surface Course shall meet the following requirements:

- Deleterious Substances (combined aggregate weighted avg.) 3.0% max
  Clay Lumps and Friable Particles, ASTM C142-78
  Lightweight Pieces, ASTM C-123-94

- Absorption by Water, ASTM C127-88 3.0% max

- Soundness Loss by ASTM C88-90, using sodium sulfate (NaS04)
  Crushed Rock (limestone, dolomite, granite, quartzite) 10.0% max
  Sand gravel, gravel, crushed gravel, crushed sand-gravel 12.0% max

- Wear loss by L.A. Abrasion, ASTM C131-89 40.0% max

- At least 75 percent of the blended coarse aggregate shall be crushed. Individual coarse crushed limestone and other ledge rock shall be considered 100 percent crushed. Coarse crushed sand gravel will be assigned a crushed percentage value as determined by Nebraska Department of Roads Test Method T586. Each individual coarse aggregate will be evaluated and a weighted average will be used for the minimum 75 percent criteria.

2. Fine Aggregate for Surface Course shall consist of crushed or uncrushed particles substantially free from clay lumps and vegetable matter.

- At least 75% of the amount passing a #200 sieve by washing method shall pass the same sieve by the dry screening method.
- Organic Impurities, ASTM C40-42 lighter or equal to standard
- Absorption by Water, ASTM C128-93 3.0% max
- The blended fine aggregate (minus No. 4 sieve retained on the No. 200 sieve) shall have a minimum air void content of 40 percent as determined by AASHTO TP 33 "Test Method for Uncompacted Void Content of Fine Aggregate (As Influenced by Particle Shape, Surface, Texture, and Grading)". Each individual fine aggregate shall be tested for air voids and the weighted average shall be at least 40 percent.

3. The Bituminous Material shall have a PG binder grade of 64-22 and conform to the requirements of AASHTO Specification MP1-93 for performance graded asphalt cements.

2.2 AGGREGATES AND MIXES

A. Surface Course Aggregate and Mix: The Surface Course Aggregate and mix shall meet the requirements of Surface Type FMC as outlined in the City of Omaha Public Works' "Table of Hot Mix Asphaltic Concrete Parameters". A copy of the table is attached at the end of this specification section.

B. Base Course Aggregate and Mix: The base course aggregate and mix shall meet the requirements of Base Course as outlined in the City of Omaha Public Works' "Table of Hot Mix Asphaltic Concrete Parameters". A copy of the table is attached at the end of this specification section.

C. Recycled asphalt pavement shall not be allowed in this project.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that subgrade is dry and in suitable condition to support paving and imposed loads.

B. Proof-roll subbase using heavy, pneumatic-tired rollers to locate areas that are unstable or that require further compaction.

C. Proceed with paving only after unsatisfactory conditions have been corrected.

3.2 COMPACTION

A. HAULING AND SPREADING: The prepared bituminous mixture shall be hauled and spread in accordance with City of Omaha, Standard Specifications for Public Works Construction, "Hauling and Spreading Asphaltic Concrete Mixtures".

1. In addition to a spreading and finishing machine, the Contractor will be required to furnish shovelers and rakers to do touch-up work behind the machine. Asphaltic concrete shall not be placed when mixture temperature is less than 225°F nor when the ambient temperature is less than 50°F.

B. Compaction: As soon as the mixture will carry the compaction equipment without undue displacement or shoving, it shall be compacted with self-propelled rollers. Rolling equipment shall comply to the requirements of the City of Omaha *Standard Specifications for Public Works Construction*, Section 401.06, "Compaction and Finishing Asphaltic Concrete Mixtures".

1. The asphaltic concrete surface shall be compacted to in-place density when compared to maximum laboratory density expressed as a percentage within the range as shown below. Maximum laboratory density shall be determined in accordance with ASTM "Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures", Designation D2041.

5/8 inch surface course - 92 to 94 percent

C. Testing: The Government will furnish asphalt plant control services and will do all the usual testing connected with this type of work. The contractor will be required to furnish a building about 8 feet by 12 feet, equipped with benches, lights, electric power, water and heat, if necessary, for the use of the plant control technicians.

D. Joints: Placing of bituminous mixture shall be as nearly continuous as possible, and the roller shall pass over the unprotected end of the freshly laid mixture only when the laying of the course is discontinued for such length of time as to permit the mixture to become chilled. In all such cases, when the work is resumed the material laid shall be cut back so as to produce a slightly beveled edge for the full thickness of the course. All edges that have cooled for more than one hour shall be tacked with bituminous material, except that cooled longitudinal joints need not be tacked if an infra-red heating device is used on the bituminous spreading machine. The old material which has been cut away shall be removed from the work and the new mixture laid against the fresh cut. If desired, a stout rope may be stretched across the pavement where the joint is to be made. When the work is resumed, the material laid shall be cut back to the rope which will be removed, together with the surplus material, and the fresh mix laid against the joint thus formed. Hot smoothing irons may be used for sealing joints, but in such case, extreme care shall be exercised to avoid burning the surface.

E. Surface Tests: While still warm, the surface shall be tested as follows, and corrected as necessary by properly adding or removing material, retesting and rerolling until the finished surface complies with the test requirements.

1. The finished pavement shall show no deviation from the general surface in excess of ¼" as measured in the following manner: A 10' straight edge shall be placed parallel to the center line of the roadway so as to bridge any depressions, and touch all high spots. Ordinates measured from the face of the straight edge to the surface of the pavement shall not exceed 0.25", and any depressions and any high area in excess of 0.25" shall be corrected by the contractor.

2. Such portions of the completed pavement as are defective in finish, density, or composition, or that do not comply in all respects with the requirements of the specifications, shall be taken up, removed, and replaced with suitable material, properly laid in accordance with these specifications, and at the expense of the contractor.

END OF SECTION 02741